which coefficients shown in Tables 2 - 7 are substituted into the optical path difference function of Math-6.

[Math-6]

Optical path difference function

$$\phi(h) = \sum_{i=0} C_{2i} h^{2i}$$

Herein, C2i is a coefficient of the optical path difference function.

Hereupon, in Tables 2 - 7, "reference wavelength" indicates so-called the blaze wavelength, and a wavelength in which, when the light flux having that wavelength is incident on the lens, the diffraction efficiency of the diffraction light of all-orders generated by the diffractive structure is the maximum (for example, 100 %).

AS3(total) of ~~Fig~~ Table 1(a) and (b) shows, when the temperature rises 30 °C, a total of 4 astigmatisms (AS3(Δn), AS3(Δλ), AS3(ΔL), AS3(ΔS)).

According to the beam-shaper and the optical pick-up apparatus in the present embodiment, it can be seen from Table 1 that, even when the environmental temperature is changed, the generation of the astigmatism can be suppressed.

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